

I CLAIM:

1. An air applicator for placing a series of parts onto a substrate, the air applicator comprising:
 - a passage having an upstream end and a downstream end opposite the upstream end; and
 - one or more orifices adapted to direct an air flow towards the downstream end;
 - wherein the air applicator increases the spacing between successive parts from a first spacing at the upstream end to a second spacing at the downstream end, and increases the velocities of the parts from a first velocity at the upstream end to a second velocity at the downstream end.
2. The air applicator of claim 1, further comprising a cutting device disposed proximal to the upstream end; said cutting device being adapted to sever parts from at least one material supply.
3. The air applicator of claim 2, wherein the cutting device is a die cutter.
4. The air applicator of claim 1, further comprising a moving substrate onto which the parts are applied, the moving substrate being disposed proximal to the downstream end.
5. The air applicator of claim 4, wherein the moving substrate is a material web, a supply of discrete objects, or a conveying device.
6. The air applicator of claim 4, wherein the second velocity is approximately equal to the velocity of the moving substrate.
7. The air applicator of claim 1, wherein the one or more orifices may be manipulated to adjust the air flow properties.
8. The air applicator of claim 1, further comprising a regulator adapted to control properties of the air flow.
9. The air applicator of claim 1, wherein the parts are foam panels, ribbons, sheets, yarns or strands.

10. The air applicator of claim 1, wherein the upstream end comprises a splayed opening.
11. The air applicator of claim 1, further comprising:
 - a pressure regulator adapted to control the pressure of air entering the one or more orifices; and
 - a control system adapted to control the pressure regulator to thereby control the second spacing and second velocity.
12. The air applicator of claim 11, wherein the control system is further adapted to detect a value of at least one of the second speed and second spacing and to control at least one of the second spacing and second velocity based on the detected value.
13. An internal air applicator for placing a series of parts onto a substrate, the internal air applicator comprising:
 - a substantially enclosed passage having an upstream end and a downstream end opposite the upstream end; and
 - one or more orifices adapted to direct an air flow towards the downstream end;

wherein the internal air applicator increases the spacing between successive parts from a first spacing at the upstream end to a second spacing at the downstream end, and increases the velocities of the parts from a first velocity at the upstream end to a second velocity at the downstream end.
14. The internal air applicator of claim 13, wherein the substantially enclosed passage has a rounded profile.
15. The internal air applicator of claim 13, wherein the substantially enclosed passage has a rectilinear profile.
16. The internal air applicator of claim 13, further comprising a moving substrate onto which parts are applied, the moving substrate being disposed proximal to the downstream end.
17. The internal air applicator of claim 16, wherein the moving substrate comprises absorbent garment subassemblies and the parts comprise yarns.

18. The internal air applicator of claim 13, further comprising a regulator adapted to control properties of the air flow.
19. The internal air applicator of claim 13, wherein the one or more orifices comprise an eductor.
20. The internal air applicator of claim 13, wherein the substantially enclosed passage is a coanda passage.
21. An absorbent garment comprising:
 - a topsheet;
 - a backsheet;
 - an absorbent core disposed between the topsheet and backsheet; and
 - one or more yarns assembled to the garment using the internal air applicator of claim 13.
22. An external air applicator for placing a series of parts onto a substrate, the air applicator comprising:
 - a guide plate having an upstream end and a downstream end opposite the upstream end, the guide plate defining an open passage; and
 - one or more orifices adapted to direct an air flow towards the downstream end;

wherein the external air applicator increases the spacing between successive parts from a first spacing at the upstream end to a second spacing at the downstream end, and increases the velocities of the parts from a first velocity at the upstream end to a second velocity at the downstream end.
23. The external air applicator of claim 22, further comprising guide rails disposed on the guide plate on either side of the open passage and extending at least partly between the upstream end and the downstream end.
24. The external air applicator of claim 22, further comprising one or more guide pins disposed on the guide plate on either side of the open passage.
25. The external air applicator of claim 22, further comprising rows of two or more guide pins disposed on the guide plate on each side of the open passage.

26. The external air applicator of claim 22, wherein the one or more orifices comprise angled slots through the guide plate.
27. The external air applicator of claim 22, wherein the one or more orifices comprise an air knife.
28. The external air applicator of claim 27, wherein the air knife is adjustably mounted.
29. The external air applicator of claim 22, further comprising a regulator adapted to control properties of the air flow.
30. The external air applicator of claim 22, further comprising a moving substrate onto which parts are applied, the moving substrate being disposed proximal to the downstream end.
31. The external air applicator of claim 30, wherein the moving substrate comprises absorbent garment subassemblies and the parts comprise foam panels.
32. An absorbent garment comprising:
 - a topsheet;
 - a backsheet;
 - an absorbent core disposed between the topsheet and backsheet; and
 - one or more supplemental core layers assembled to the garment using the external air applicator of claim 22.
33. An absorbent garment core forming apparatus comprising:
 - a rotary vacuum drum having a vacuum surface;
 - a core forming chamber adapted to provide a supply of absorbent core material to the vacuum surface, the core forming chamber being disposed adjacent the rotary vacuum drum;
 - one or more air applicators disposed adjacent the rotary vacuum drum;
wherein the one or more air applicators are adapted to apply discrete parts to at least one of the vacuum surface and/or the absorbent core material.
34. An absorbent garment core forming apparatus comprising:
 - a rotary vacuum drum having a vacuum surface;

a supply of tissue material, the supply of tissue material being disposed on at least a portion of the vacuum surface of the rotary vacuum drum;

a core forming chamber adapted to provide a supply of absorbent core material to the supply of tissue material, the core forming chamber being disposed adjacent the rotary vacuum drum; and

one or more air applicators disposed adjacent the rotary vacuum drum;

wherein the one or more air applicators are adapted to apply discrete parts to at least one of the supply of tissue material and/or the absorbent core material.

35. An absorbent garment core forming apparatus comprising:

a rotary vacuum drum;

a core forming chamber adapted to provide a supply of absorbent core material, the core forming chamber being disposed adjacent the rotary vacuum drum; and

one or more air applicators disposed at least partially within the core forming chamber;

wherein the one or more air applicators are adapted to apply discrete parts into the core forming chamber.

36. A method for placing a series of parts onto a substrate, the method comprising:

providing a series of parts to a passage having an upstream end and a downstream end opposite the upstream end;

providing an air flow to the passage, the air flow being directed towards the downstream end;

using the air flow to increase the spacing between the parts from a first spacing at the upstream end to a second spacing at the downstream end;

using the air flow to increases the velocities of the parts from a first velocity at the upstream end to a second velocity at the downstream end; and

depositing the parts, at a second spacing and a second velocity, on a substrate positioned adjacent the downstream end.

37. The method of claim 36, further comprising severing the parts from a continuous material supply as they enter the passage.
38. The method of claim 36, further comprising controlling the second speed and second spacing by modulating a pressure regulator adapted to control the pressure of air entering the one or more orifices.
39. The method of claim 38, further comprising detecting a value of at least one of the second speed and second spacing and controlling at least one of the second spacing and second velocity based on the detected value.
40. A disposable absorbent garment made according to the method of claim 36.